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growing carbon nanotubes from the heated catalyst.

12. (Amended) A method of synthesizing carbon nanotubes, comprising the steps of:

introducing a catalyst in a reactor;

supplying a reactant gas containing a carbon source gas over the catalyst;

selectively and locally heating the catalyst in the reactor without necessarily heating anything else; and

growing carbon nanotubes from the heated catalyst,

wherein the local heating of the catalyst is performed by irradiation of microwaves.

16. (Amended) An apparatus for synthesizing carbon nanotubes, comprising:
a reactor for receiving a catalyst on a support structure that is not necessarily tolerant of a reaction temperature of the catalyst;
a reactant gas supplier for supplying a carbon source gas into the reactor; and
a local heater for selectively heating the catalyst received in the reactor, without necessarily heating anything else, to the reaction temperature of the catalyst.

24. (Amended) An apparatus for synthesizing carbon nanotubes, comprising:
a support structure for introducing a catalyst in a reactor that is not necessarily tolerant of a reaction temperature of the catalyst;

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means for supplying a reactant gas containing a carbon source gas over the catalyst; and

means for selectively and locally heating the catalyst in the reactor, such that the catalyst is heated to the reaction temperature of the catalyst without necessarily heating anything else, wherein carbon nanotubes are grown from the heated catalyst.

Please add new claims 25-27 as follows:

25. (New) A method of synthesizing carbon nanotubes, comprising the steps of: introducing a catalyst in a reactor on a support structure that is not necessarily tolerant of the reaction temperature of the catalyst; supplying a reactant gas containing a carbon source gas over the catalyst; selectively and locally heating the catalyst in the reactor, wherein said heating is restricted to the catalyst; and growing carbon nanotubes from the heated catalyst.

26. (New) An apparatus for synthesizing carbon nanotubes, comprising: a reactor for receiving a catalyst on a support structure that is not necessarily tolerant of a reaction temperature of the catalyst; a reactant gas supplier for supplying a carbon source gas into the reactor; and a local heater for selectively heating the catalyst received in the reactor, wherein said heating is restricted to the catalyst.

27. (New) The method of claim 1, further comprising the steps of: placing the catalyst in a gas phase and maintaining the catalyst in a gas by application of heat.